

ENDOMETRIOSIS

I405V polymorphism of *CETP* gene and lipid profile in women with endometriosisMehdi Sahmani¹, Talaat Dabbaghi Ghaleh¹, Maryam Darabi², Masoud Darabi², Zahra Rashvand¹, and Reza Najafipour¹¹Department of Clinical Biochemistry and Genetics, Cellular and Molecular Research Center, Faculty of Medicine, Qazvin University of Medical Sciences, Qazvin, Iran and ²Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract

Genetic factors have an important role in the pathophysiology of endometriosis. In addition, abnormalities in lipid profile and intrinsic inflammatory status are associated with disease progression. The purpose of this study was to evaluate the effect of the I405V polymorphism of *cholesteryl ester transfer protein* (*CETP*) gene and lipid profile with the risk of endometriosis in women. Ninety-seven women with laparoscopy-diagnosed endometriosis were recruited for this study, and 107 patients with no evidence of endometriosis confirmed by laparoscopy served as controls. Samples were analyzed for polymorphism of the *CETP* gene using polymerase chain reaction–restriction fragment length polymorphism-based methods. After adjustment for body mass index, high-density lipoprotein-C and low-density lipoprotein-C, the risk of endometriosis in patients with normal genotype homozygous was more of the rare allele ($p < 0.001$, odds ratio = 0.21, 95% confidence interval = 0.09–0.45). Our results suggest that I405V polymorphism of *CETP* gene plays an important role as independent factor in the risk of endometriosis in women.

Introduction

Endometriosis is a common benign gynecological disorder that is characterized by the development of the endometrial tissue outside the uterus [1]. Endometrial implants are most commonly found on the visceral peritoneal surfaces. However, the tissue with endometrial abnormalities may also appear on the bladder or bowel [2]. The disease is diagnosed by laparoscopy with or without biopsy for histological diagnosis [2,3]. According to its extent, endometriosis was classified as stages I (minimum), II (mild), III (moderate) and IV (severe) [4]. Despite extensive research, the definitive cause of endometriosis is still unknown [5,6]. Studies showed that elevation of serum lipoprotein in patients with endometriosis is associated with an increased risk of cardiovascular disease [7]. *CETP* is a key protein in plasma lipoprotein metabolism, particularly as a modulator of high-density lipoprotein (HDL)-C levels. The (*cholesteryl ester transfer protein*) *CETP* gene is located on chromosome 16 and consists of 16 exons [8]. The gene possesses several different single-nucleotide polymorphisms (SNPs) has no sense. One of these polymorphisms is I405V polymorphism (rs5882) that is the substitution of valine to isoleucine at codon 405 in exon 14 [8]. Melo et al. [9] suggested that disruption of lipid profile with elevated low-density lipoprotein (LDL) and non-HDL may increase oxidative stress and inflammation in the peritoneal fluid and increase the risk of endometriosis. This hypothesis supports that women with endometriosis have a dyslipidemia that

Keywords

CETP, endometriosis, I405V polymorphism, lipid profile

History

Received 12 December 2012

Revised 4 March 2013

Accepted 26 March 2013

Published online 4 June 2013

could provide a suitable pathological substrate for inflammatory process and oxidative stress in endometrial tissue [10]. Several studies evaluated the impact of *CETP* I405V SNP on myocardial infarction risk [11,12], but there are no studies conducted. The purpose of this study was to determine the prevalence of I405V polymorphism of *CETP* gene in women with endometriosis with respect to the control group and concurrent evaluation of this gene polymorphism on lipid profile and the risk of endometriosis.

Materials and methods

Subjects

In this cross-sectional study, women (aged 18–42 years) with chronic pelvic pain or infertility referred to the Kosar Hospital in Qazvin for diagnostic laparoscopy between April 2011 and April 2012 were consecutively included. Among 310 women, 204 were eligible and consented to participation in the study (Figure 1). The study was approved by the ethics committee of Qazvin University of Medical Sciences. To obtain more homogeneous population and verifying that no endometriosis is present, controls were also selected from women undergoing laparoscopy. A total of 97 patients had surgical and histological evidence of endometriosis, while 107 patients without the disease served as controls (women with uterine myoma, dermoid cyst, paraovarian cyst, serous cyst and healthy women). Among the endometriosis patients, 10 patients were diagnosed with stage I, 13 patients with stage II, 35 patients with stage III and 39 patients with stage IV. Endometriosis condition was confirmed by diagnostic laparoscopy or laparotomy in both groups. None of the patients had received hormone therapy during the past 1 year. In addition, women who had received anti-inflammatory drug and

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